Electrical Technology

Elektrichestvo

Index to 1996 Volume

PERGAMON

ELECTRICAL TECHNOLOGY

Editor: F. B. Hinderwell, BSc.(Eng.), CEng. MIEE
Translator: P. S. Curtis
Consultant Translation Editor: R. C. Glass

ELEKTRICHESTVO

Russian Original Copyright, 103012 Moscow K-12, B. Cherkasskii per 2/10

Editor-in-Chief: V. A. STROYEV

Moscow Power Institute

Published Quarterly in January, April, July and October

Publishing and Advertising Offices:
Elsevier Science Ltd, The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, U.K.
Tel. (01865) 843000. Fax. (01865) 843010.
Elsevier Science Inc., 660 White Plains Road, Tarrytown, NY 10591-5153, U.S.A.

Annual Institutional Subscription Rates 1997: Europe, The CIS and Japan 2350.00 Dutch Guilders. All other countries US$1451.00. Associated Personal Subscription rates are available on request for those whose institutions are library subscribers. Dutch Guilder prices exclude VAT. Non-VAT registered customers in the European Community will be charged the appropriate VAT in addition to the price listed. Prices include postage and insurance and are subject to change without notice.

For orders, claims, product enquiries (no manuscript enquiries) please contact the Customer Support Department at the Regional Sales Office nearest to you:

The Americas: Elsevier Science Inc., Customer Support Department, 655 Avenue of the Americas, New York, NY 10010, U.S.A. [Tel: (+1) 212-633-3730 / 1-888 4ES-INFO. Fax: (+1) 212-633-3680. E-mail: usinfo-f@elsevier.com].

Japan: Elsevier Science Customer Support Department, 9–15 Higashi-Azabu 1-chome, Minato-ku, Tokyo 106, Japan [Tel: (+81) 3-5561-5033. Fax (81) 3-5561-5047. E-mail: kyf04035@niftyserve.or.jp].

Asia Pacific *(excluding Japan):* Elsevier Science (Singapore) Pte Ltd, No. 1 Temasek Avenue, 17-01 Millenia Tower, Singapore 039192. [Tel: (+65) 434-3727. Fax: (+65) 337-2230. E-mail: asiainfo@elsevier.com.sg].

Rest of the World: Elsevier Science Customer Service Department, PO Box 211, 1001 AE Amsterdam, The Netherlands. [Tel: (+31) 20-485-3757. Fax: (+31) 20-485-3432. E-mail: nlinfo-f@elsevier.nl].

PERIODICALS POSTAGE PAID AT RAHWAY, NJ and additional entry points. *Electrical Technology* (ISSN 0965-5433) is published quarterly in January, April, July and October in one Volume, by Elsevier Science Ltd, The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, U.K. The annual subscription in the U.S.A. is $1451.00. *Electrical Technology* is distributed by Mercury Airfreight International Ltd, 10 Camptown Road, Irvington, NJ 07111-1105. Postmaster: please send address corrections to *Electrical Technology*, c/o Elsevier Science, Inc., Customer Support Department, 655 Avenue of the Americas, New York, NY 10010, U.S.A. [Tel: (+1) 212-633-3730 / 1 888 4ES-INFO. Fax: (+1) 212-633-3680. E-mail: usinfo-f@elsevier.com].

Disclaimer. No responsibility is assumed by the Publisher for any injury and/or damage to persons or property as a matter of products liability, negligence or otherwise, or from any use or operation of any methods, products, instructions or ideas contained in the material herein.

∞ ™ The paper used in this publication meets the minimum requirements of American National Standard for Information Sciences — Permanence of Paper for Printed Library Materials, ANSI Z39.48-1984.

The Item-Fee Code for this publication is: 0965-5433/96 $24.00 + 0.00.

VOLUME CONTENTS

1996 NUMBER 1

V. L. Dyatlov, V. V. Konyashkin, B. S. Potapov and Yu. A. P'yankov	1	Planar electric micromotors
Kh. G. Karimov and M. K. Bobozhanov	19	New design of pole-changing windings for induction motors for intense operating conditions
R. K. Borisov, Ye. S. Kolechitskii, A. V. Gorshkov and V. V. Balashov	29	Procedure and technical equipment for diagnosing earthing system conditions in electrical power installations
N. V. Dolmatov	35	A ferromagnetic steel cylinder in a polyharmonic magnetic field
V. V. Khudyakov and N. M. Guseinov	49	Methods for eliminating torsional vibrations of turbine generator shafts operating with a converter load
S. P. Boyar-Sozonovich	59	Dual-rotation alternating-current generators
V. I. Poleshchuk	69	A multiloop speed and position control for an electrical drive with cascaded invariant control
A. I. Chuchalin and G. A. Sipailov	83	Electromechanical pulse generators with active screening of the windings
G. Ch. Shushkevich and S. V. Shushkevich	89	Electrostatic field of a flattened ellipsoid and disc between two thin open spherical shells
S. I. Kutuzov	101	Limiting of higher harmonics introduced into an autonomous power system by a synchronous machine
M. Yu. Shuvalov, A. V. Romashkin, M. A. Mavrin and V. L. Ovsiyenko	113	Video microscopy of treeing
V. P. Toporkov and Ye. V. Fedotov	127	Equivalent reactances and electromotive forces of an electrical machine with two rotors under dynamic operating conditions
V. S. Baushev, Zh. T. Zhusubaliyev and S. G. Mikhal'chenko	137	Stochastic features in the dynamic characteristics of a pulse-width controlled voltage stabilizer
	i	List of papers not translated from *Elektrichestvo* Nos 1–3 1996

Yu. Ye. Gurevich, E. A. Kasparov, I. A. Labunets, Z. G. Khvoshchinskaya and **Yu. G. Shakaryan**	1	Use of different turbine generators in steam/gas turbine and steam turbine electrical power plants
M. V. Vazyulin and **A. I. Leviush**	13	Clock synchronization in relay protection systems
Ya. B. Danilevich and **A. V. Kochnev**	27	Low-power synchronous generators with permanent magnets
D. B. Izosimov and **S. Ye. Ryvkin**	33	Improvement in the quality of energy consumption using semiconductor converters with pulse-width modulation
I. V. Yakimets, V. A. Vinokurov and **V. G. Narovlyanskii**	47	A transport system magnetic suspension based on a high-temperature superconductor
N. I. Zelenokhat, Kh. S. Barguti and **S. A. Levchenko**	57	Evaluation of transient electromechanical oscillations in an electrical power system
V. B. Nikanorov, S. Yu. Ostanin and **G. A. Shmeleva**	69	Mathematical modelling of a hysteresis motor with a non-sinusoidal asymmetrical supply
P. G. Shlyakhtenko	77	A new method and equipment for controlling the electrical properties of powder-based quasidielectric structures
V. P. Gerikh, M. G. Portnoi, A. A. Okin, R. S. Beim, I. V. Litkens, S. Yu. Syromyatnikov, N. G. Filippova and **V. A. Shtrobel'**	85	Investigation of the dynamic properties of a power system of longitudinal structure
V. G. Dan'ko and **V. I. Milykh**	95	Natural thyristor commutation in a d.c. linear motor
Yu. A. Bortsov and **A. V. Savilov**	107	Modelling of adaptive interconnected electromechanical systems on a transputer
I. V. Pentegov	119	Theory of Tesla processes in the charging of capacitive energy storages
	i	List of papers not translated from *Elektrichestvo* Nos 4–6 1996

Yu. A. Fokin and **S. O. Aleksandrov**	1	A method for calculating the reliability of electrical energy sources in power system development planning
B. I. Iof'yev	13	Determining the limit of active power exchange in a three-node power system
G. N. Aleksandrov and **Yu. A. Gerasimov**	31	Electrical strength of a three-phase insulation system on the tower of a compact overhead transmission line
F. A. Zykin and **M. K. Kazakov**	41	Current and voltage distribution in electrolysis power supplies for aluminium plants
A. V. Orlov and **A. G. Temnikov**	49	Determination of the electric field of a submerged turbulent jet of charged aerosol
Zh. A. Duzkenova and **K. P. Kadomskaya**	63	Information transmission by means of high-voltage power cables
A. A. Stavinskii	73	Induction motors with tangential displacement of the stator laminations
V. B. Nikanorov, S. Yu. Ostanin and **G. A. Shmeleva**	85	Computer-aided modelling of a hysteresis motor and numerical analysis of its characteristics
V. M. Terekhov and **A. S. Baryshnikov**	97	Stabilization of slow-moving electrical drives using fuzzy logic
I. V. Yakimets, I. Z. Gluzkin and **V. G. Narovlyanskii**	105	Detection of power system asynchronism by measurement of the phase angle between equivalent generator electromotive forces
V. T. Ivanov and **T. M. Shamsutdinova**	117	Analysis of electric fields in parallel pipeline cathodic protection systems
V. I. Malinin and **V. A. Tyukov**	125	Analysis of mechanical work in electromagnetic motors
V. A. Labuntsov and **Ye. Ye. Chaplygin**	133	Reactive power compensators using rectifiers with natural switching
Yu. G. Bykov, Yu. M. In'kov and **M. D. Simonov**	143	Control characteristics of a single-phase reversible voltage converter
	i	List of papers not translated from *Elektrichestvo* Nos 7–9 1996

A. M. Rubinraut and **N. V. Burbayeva**	1	A superconducting inductive energy storage device for increasing the dynamic stability of a power system with a synchronous load
L. K. Kovalev, V. N. Poltavets, V. S. Semenikhin, L. A. Yegoshkina, K. Ya. Vil'danov, V. A. Ignatov and **V. Gavalek**	19	Hysteresis motor with a disc-type composite rotor of melt-textured HTSC ceramic material
V. I. Popov	27	Optimization of the electromagnetic parameters of three-phase windings of electrical machines
V. V. Filaretov	41	Improved decoding method for electrical network analysis
V. G. Dubovoi	55	Modelling of switching operations in electrical installations
A. R. Koryavin and **O. V. Volkova**	69	Electrical discharge in long air gaps in the presence of insulated bodies
D. B. Izosimov, Ye. M. Lopukhina and **A. B. Zakharenko**	79	Optimization of the dimensions of the active zone of induction motors for variable-speed drives
M. S. Metsik and **L. A. Shcherbachenko**	93	Surface conductivity of mica crystals
Yu. Ya. Lyamets, V. A. Il'in and **N. V. Podshivalin**	101	Fault location in transmission lines
V. K. Obabkov and **A. P. Nikiforov**	113	Accuracy of automatic tuning of the frequency of free oscillations in symmetrical networks with a resonant grounded neutral
A. N. Tarasov	129	Modelling high-voltage thyristors under dynamic conditions
N. A. Izergin	145	A multistack switch-controlled induction motor
S. A. Yerofeyev	155	Design of piezotransformers and assemblies
	i	List of papers not translated from *Elektrichestvo* Nos 10–12 1996